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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,647	08/18/2003	Jong-Jin Yoon	DE-1499	5235
1109	7590	05/19/2006	EXAMINER	
ANDERSON, KILL & OLICK, P.C. 1251 AVENUE OF THE AMERICAS NEW YORK,, NY 10020-1182			DOVE, TRACY MAE	
			ART UNIT	PAPER NUMBER

1745

DATE MAILED: 05/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/643,647

Applicant(s)

YOON ET AL.

Examiner

Tracy Dove

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2003.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-10 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 18 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claims Analysis***

Claim 1 recites “for a polymer electrolyte membrane fuel cell”, which is not given patentable weight because it is an intended use limitation.

Claim 10 recites “a direct methanol fuel cell”, which is not given patentable weight because it is an intended use limitation. Methanol is the fuel used by the polymer electrolyte membrane fuel cell. Polymer electrolyte fuel cells also use hydrogen as fuel. The type of fuel used by the polymer electrolyte fuel cell does not further limit the structure of the polymer electrolyte fuel cell.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3-4 and 6-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites polyimide is a thermoplastic resin and claim 4 recites polyimide is a thermosetting resin. It is unclear is Applicant intended to claim polyimide is both a thermoplastic resin and a thermosetting resin.

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Claim 6 recites the limitation "the electroconductive powder". There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 9 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshida, US 6,468,685.

Yoshida teaches a separator for a fuel cell wherein the separator comprises a graphite/thermosetting resin substrate coated with a conductive film (abstract). Figure 4 shows the graphite/thermosetting resin substrate 4 coated with the conductive film 14. The fuel cell is a solid polymer electrolyte fuel cell (4:24-34). The thermosetting resin is preferably phenol resin. However, polycarbodimide resin (thermoplastic and thermosetting resin), epoxy resin, furfuryl alcohol resin, urea resin, melamine resin, unsaturated polyester resin or alkyd resin may be used (3:45-52). The graphite of the resin substrate may be carbon black (3:53-56). The conductive coating may be a graphite paste, gold paste or silver paste that is sprayed, vapor-deposited, printed or applied to the resin substrate, and then dried.

Thus the claims are anticipated.

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Claims 1-5, 9 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Vyas et al., US 6,866,958.

Vyas teaches an electrically conductive fluid distribution element (separator) for a fuel cell which comprises an electrically conductive substrate and an electrically conductive coating on the surface of the substrate (abstract). The electrically conductive coating 94 can be deposited onto element 12 the includes a polymeric material 113 with a conductive fibrous filler 114. The polymeric material may be a thermoset polymer (silicone, epoxy, phenolic or vinyl ester) or a thermoplastic polymer (nylon is a polyamide) (6:23-44 and Figure 7). The fibrous filler may include carbon fibers, metal fibers or glass fibers (6:45-7:7). A polymer electrolyte membrane (PEM) fuel cell is shown in Figures 1 and 2.

Thus the claims are anticipated.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida, US 6,468,685 in view of Fronk et al., US 6,372,376.

Yoshida teaches a separator for a fuel cell wherein the separator comprises a graphite/thermosetting resin substrate coated with a conductive film (abstract). Figure 4 shows the graphite/thermosetting resin substrate 4 coated with the conductive film 14. The fuel cell is a solid polymer electrolyte fuel cell (4:24-34). The thermosetting resin is preferably phenol resin.

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However, polycarbodimide resin (thermoplastic and thermosetting resin), epoxy resin, furfuryl alcohol resin, urea resin, melamine resin, unsaturated polyester resin or alkyd resin may be used (3:45-52). The graphite of the resin substrate may be carbon black (3:53-56). The conductive coating may be a graphite paste, gold paste or silver paste that is sprayed, vapor-deposited, printed or applied to the resin substrate, and then dried.

Yoshida does not explicitly teach the specific components of the “paste” that is applied to the resin substrate.

However, Fronk teaches a PEM fuel cell comprising a separator having an electrically conductive polymer film applied to a substrate (abstract). The electrically conductive film is applied to the working face of the substrate by spraying, brushing or spreading. A precursor coating is formed by dissolving a polymer in a suitable solvent, mixing the conductive filler particles with the dissolved polymer and applying it as a wet slurry (paste) atop the substrate. The wet coating is dried and cured as needed (for thermosets). The conductive particles adhere to the substrate by means of the polymer. A preferred polymer is polyamide-imide thermosetting polymer. The electroconductive particles comprise about 38 wt% of the coating (6:20-51).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because one of skill would have been motivated to use the electroconductive coating composition of Fronk for the electroconductive coating paste of Yoshida. Both Fronk and Yoshida teach applying electroconductive coating to PEM fuel cell separator substrates. One of skill would have been motivated to use the coating composition of Fronk for the paste of Yoshida to adhere the conductive particles to the substrate. Furthermore, the term “paste” implies a polymer, solvent and conductive particle composition in the art.

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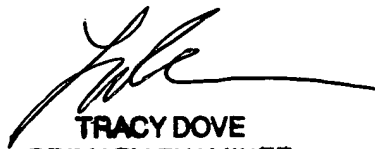
***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

May 16, 2006

  
**TRACY DOVE**  
**PRIMARY EXAMINER**